

ABSTRACT OF THE DISCLOSURE

There is provided an electrode structure for a polymer electrolyte fuel cell having excellent power generation performance and excellent durability and a method for manufacturing the same. Also provided is a polymer electrolyte fuel cell including the electrode structure and an electrical apparatus and a transport apparatus using the polymer electrolyte fuel cell. The electrode structure includes a polymer electrolyte membrane 2 sandwiched between a pair of electrode catalyst layers 1, 1 containing carbon particles supporting catalyst particles. The polymer electrolyte membrane 2 is made of a sulfonated polyarylene-based polymer. The sulfonated polyarylene-based polymer has an ion exchange capacity in the range of 1.7 to 2.3 meq/g, and the polymer contains a component insoluble in N-methylpyrrolidone in an amount of 70% or less relative to the total amount of the polymer, after the polymer is subjected to heat treatment for exposing it under a constant temperature atmosphere of 120°C for 200 hours. A catalyst paste containing catalyst particles and a polymer electrolyte is coated on a sheet-like support 6 and dried to form an electrode catalyst layer 1 containing a solvent in an amount in the range of 0.5% or less by weight of the total membrane. The electrode catalyst layers 3, 3 are thermally transferred and joined on both sides of the polymer electrolyte membrane 1.